

pons situated near and affecting the nucleus of the fifth nerve. In THE LANCET of Dec. 11th, 1886, I published a case of tumour of the pons Varolii, where ulceration of the cornea appeared shortly before death, and where its late appearance was due to the fact that the tumour began on the surface of the pons, and for a time the only nerves affected were the sixth and seventh. As the tumour extended into the pons the fifth nerve became involved, and there followed neuro-paralytic ophthalmia with ulceration and perforation of the cornea. The case which forms the subject of this communication is interesting, if not unique: in the first place, because of the nature, the site, and the results of the lesion, a small cheesy nodule in the pons giving rise to acute general tuberculosis; and, secondly and chiefly, because ulceration, more correctly necrosis, of the cornea was the only special symptom present by which it was possible to localise the lesion. The facial paresis followed the corneal affection, was not at all well marked, and might easily have been overlooked.

Aberdeen.

TWO CASES OF FRACTURE OF THE SPINE TREATED BY TREPHINING.

By HERBERT W. ALLINGHAM, F.R.C.S.,
SURGEON TO THE GREAT NORTHERN CENTRAL HOSPITAL, ETC.

THE following two cases came under my care at the Great Northern Central Hospital last year. Although the results have not been very satisfactory, yet I deem it right to put them on record, as I think one or two important points may be learnt in considering the question of spinal surgery.

John E—, aged thirty-one, was admitted into the hospital on July 23rd, 1888, having fallen between thirty and forty feet from the top of a house. He is said to have fallen on to his head, his body doubling backwards. On admission he had complete paralysis of the lower limbs, but no priapism. He also complained of a pain around his waist as if he were being constricted by an iron band; this pain was on a level with the ensiform cartilage. No deformity could be felt or seen about the back. He was perfectly conscious. Temperature 95·8°. A few hours later he complained of "pins and needles" in the hands, and he had to have a catheter passed. He remained in about the same state until about Aug. 10th, when his urine began to dribble away unconsciously, the bladder sometimes being completely empty on the passage of a catheter and sometimes containing an ounce of urine, evidently showing that the bladder centre was becoming involved; at the same time, his temperature began to rise, reaching 103° and 104°; and, moreover, the line of loss of sensation was getting higher. From these symptoms I inferred that ascending and descending changes were beginning to take place in the cord. Accordingly, on Aug. 16th, about three months after the accident, I trephined his spine, hoping I might relieve the pressure on the cord and also stop the inflammatory changes that were evidently spreading from the seat of the accident. The patient being placed on his stomach (chloroform having been given), an incision about twelve inches in length was made down the centre of the back, over the spinous processes of the fifth, sixth, and seventh dorsal vertebræ. The muscles on each side of the spinous processes were then held back by retractors, and the spinous processes and laminae being exposed, it was seen that the laminae of the sixth vertebra were very badly fractured and depressed, being pushed under the laminae of the vertebra above. With great trouble these were removed, the spinous process and laminae of the vertebræ above and below being snipped through with bone forceps and removed. The cord, being completely exposed for about four inches, looked rather bruised, but pulsated freely on the pressure being removed; at the same time it seemed to be curved somewhat backwards, this being probably caused by some displacement of the body of the sixth vertebra. The theca was not opened. The wound was then thoroughly washed with carbolic lotion (1 in 40), and a large drainage-tube placed in the wound, extending from its upper to its lower angle. No deep sutures were used, the skin being

sutured with silver sutures and antiseptic dressings applied, the operation taking an hour and a half. The same night the patient slept well. The catheter was passed, but only two ounces of urine were drawn off, as most of it had dribbled away.

The next day (Aug. 17th) the patient was very comfortable, the temperature being lower. He said he had a funny sensation in the abdomen, as if mice were running over it; also a feeling of coldness. His bladder contained more urine.

Aug. 18th.—The back was dressed, and looked very quiet and well.

22nd.—Temperature 101°. The wound was dressed, and had absolutely healed by first intention. Much less dribbling of urine, and last evening the bladder was fairly full of clear urine. No return of sensation. Knee-jerk absent; superficial sole reflex seemed rather more marked.

Sept. 3rd.—Dr. Beevor kindly examined the patient, and found that the anaesthesia in the middle line began exactly five inches above the umbilicus, half an inch lower in the two mammary lines. Pin prick felt as a twitch two inches and three-quarters from the umbilicus, but not felt as a prick till three inches and three-quarters above the umbilicus. No epigastric or abdominal reflexes.

7th.—Patient had a rigor, temperature going up to 104°; and another occurred the same night.

11th.—Much better; no more rigors. Sits up daily for a few hours. Said he felt the passage of the catheter, and complained of a good deal of spasm in the abdomen, and of shooting and jumping in the legs.

On Nov. 9th, Dr. Beevor kindly examined the patient again, with the following results:—*Right side*: (1) Middle line in front, in line of anaesthesia, an inch and a half above umbilicus; (2) nipple line, the same level; (3) mid-axillary line, lower margin of the true ribs; (4) Scapular basal line, same horizontal level as (3); (5) middle line behind first lumbar vertebra. *Left side*: (1) Middle line in front, same as on right side; (2) nipple line, same as on right side; (3) mid-axillary line, tenth rib; (4) scapular basal line, twelfth rib; (5) middle line behind, same as on right side. *Analgesia*: In middle line, one inch above anaesthetic line; left side, half an inch ditto; right side, half an inch ditto; in middle line behind, one inch ditto. *Legs*: Knee-jerk absent; no ankle-clonus; plantar reflex rather active. No sensation or muscular sense in legs. Epigastric reflexes present; abdominal reflex absent. So that it will be seen by the above that he had improved as far as return of sensation about four inches.

On Jan. 26th the line of anaesthesia had not altered. The legs were contracted and stiff. Some bedsores that had formed were all healed. Knee-jerk absent; no ankle-clonus.

The patient after this left the hospital. On April 5th I heard from the patient. He was then no worse, but did not think there was any marked improvement.

The next case is that of Annie C—, aged twenty-one, who was brought to the hospital on Aug. 31st, 1888, having jumped from the top storey of a house, a height of about forty feet. She broke her fall by catching against some iron railings. On admission she complained of pain in her back, was cold and collapsed, but moved her arms freely. There were complete paralysis, anaesthesia, and analgesia over the lower part of the trunk and lower extremities, the latter commencing at a point in the middle line seven inches above the umbilicus, and in the mammary line six inches above the line of the umbilicus. The respiration was chiefly abdominal. She complained of great pain between the shoulder-blades, and on examining the back a distinct prominence could be seen corresponding to the fourth and fifth dorsal vertebræ. She complained also of a feeling of tightness and weight round the chest to a corresponding part. The epigastric and abdominal reflexes were gone. She had complete retention of urine. Knee-jerks present, but diminished; no ankle-clonus; plantar reflexes increased. There were no signs of injury to any other part of the body.

On September 5th, five days after the accident, as she remained in the same condition (no improvement), chloroform was given, and an incision about ten inches in length was made over the spinous processes of the third, fourth, fifth, and sixth dorsal vertebræ. The muscles being separated from the spinous processes, it was found that the laminae of the fourth dorsal vertebra were badly fractured. I therefore removed the spinous process and laminae of the third, fourth, and fifth vertebræ, and exposed the cord for about four inches. It was then seen that the cord was much bruised

and crushed, and that a spicula of bone projected from the right side of the body of the fourth vertebra, the cord pulsating down to this point but not below. Upon the spicula being removed, the cord commenced to pulsate below. I opened the theca in order that, if there was a blood-clot in it, it might be removed. The wound was then washed out, a large drainage-tube inserted, silver sutures put in the skin, and antiseptic dressings applied. The operation occupied an hour and three-quarters.

Sept. 7th.—Was doing fairly well. Pulse 100; respiration 30; temperature 100°. Still complained of a sharp pain all round the upper part of her body. No difference in the line of sensation. No real incontinence of urine; but the bladder seems to be very intolerant, and the urine was passed unconsciously about every three or four hours. The wound was dressed, looked extremely well, and had nearly healed by first intention.

19th.—The wound was quite healed; she began to have some twitching of the legs, but no return of voluntary power or sensation below the seat of injury.

Oct. 23rd.—On examination, there was no difference found in the line of sensation. The urine lately had been drawn off every four hours, being passed unconsciously in the intervals. The legs were in a chronic state of flexion, and if straightened soon flexed again. The knee-jerks were very brisk, but could not always be got, on account of the rigidity; ankle-clonus could be obtained in some positions but not in others. The sole reflexes were increased, and the abdominal and epigastric reflexes absent. She had not menstruated since the accident. Anæsthesia and tactile painful impressions began in the middle line in front at the tip of the ensiform cartilage; mid-axilla, in the sixth space; nipple line, fifth space; in the middle of the back, sixth vertebra.

As the patient did not in any way improve, she was sent to St. Mary's Infirmary, and there died (March, 1889) from bedsores, cystitis, &c., having lived seven months after the injury. A complete post-mortem examination could not be obtained, but I am indebted to Dr. Wright for a report of an examination he made of the seat of injury. The cord was almost divided into two parts, both ends gradually tapering down to a fine point. A microscopic examination of the cord has not yet been made.

Although these cases have not terminated in the way I hoped, yet I have learnt the following facts, which may be of use in considering the question of treatment of these cases of spinal injury. 1. That by trephining it is evident from these cases that inflammatory ascending changes are prevented. 2. That no bad symptoms follow from opening the spinal dura mater and allowing the cerebro-spinal fluid to flow out. 3. The operation, although tedious, is not a difficult one to perform, and does not in any way diminish the chance of recovery. Hæmorrhage is easily controlled, and the wound heals quickly. From the above-mentioned facts, I beg to suggest that in all cases of spinal injury followed by paralysis and loss of sensation trephining be done, so that, if the symptoms be caused by the pressure of blood or displaced bone, they may be removed before ascending and descending changes come on, and thus give the patient a chance of complete recovery.

Before closing this paper I must thank Dr. Beevor for the interest he took in these cases, and the great assistance he gave me in noting the nerve changes from time to time.

Grosvenor-street, W.

PSEUDO-HYPERTROPHIC MUSCULAR PARALYSIS OCCURRING IN FOUR BROTHERS.

By FRANK NICHOLSON, M.D. LOND.,

PHYSICIAN TO THE HULL ROYAL INFIRMARY.

THE above condition occurs, as a rule, in family groups far more frequently than as isolated cases. Meryon mentions an instance in which as many as eight brothers suffered and died from this disease; but, as Dr. Gowers,¹ with his large experience, only appears to have once met with as many as four sons in one family affected with it, the occurrence of the disease in four brothers which has come under my notice appears worthy of record.

The parents are both fifty-three years of age, and have been married twenty-seven years. They both enjoy very good health, and there is no history of pseudo-hypertrophic paralysis in either family, nor is there any taint of phthisis, cancer, syphilis, or insanity that I can discover. The husband is a coachman, and looks strong and well, and his wife is a typical example of a healthy-looking countrywoman. They were not related, and have had eleven children. 1. A boy, who died at the age of seventeen of pseudo-hypertrophic muscular paralysis. The symptoms were first noticed at the age of two, when the child was noticed to walk clumsily and badly; soon afterwards the muscles of the calves and thighs assumed very large proportions, and he walked with the back much arched and the shoulders and head thrown back, and he raised his feet from the ground with difficulty. At the age of eight he became quite unable to walk at all, and died suddenly; the exact cause I cannot trace. 2. A boy, now aged twenty-five, and in excellent health. 3. A girl, aged twenty-three, and in very good health. 4. A boy, who died at the age of fifteen of pseudo-hypertrophic muscular paralysis. Was very late in walking, which he did very awkwardly. The calves and thighs grew extremely large, whilst muscular power got less and less, and at the age of three he was unable to walk alone. After living for some years in a helpless condition, he succumbed to lung mischief. 5. A boy, now aged eighteen, and in very good health. 6. A girl, aged seventeen; quite strong and well. 7 and 8. Twins, both boys, and born sixteen years ago. Both suffered from pseudo-hypertrophic muscular paralysis, and of these I shall speak more in detail directly. 9. A girl, now aged fourteen, and in good health. 10. A girl, who died of phthisis at the age of twelve. 11. A boy, who died at the age of fourteen months, after an illness of five weeks, said to be due to teething.

I first saw the seventh and eighth children, both of whom suffered from this disease, in December, 1886. They were twins, and small for their age, which was then fourteen. The larger of these two boys, who is still living, is said to have been a fine healthy child at birth, and nothing was noticed amiss till the boy was two years old. It was then observed that he was very unsteady on his legs, walking clumsily and awkwardly, going upstairs with difficulty, and falling very readily. During the next five or six years it was noticed that the calves and thighs were much larger than natural, whilst the gait was swaying and peculiar, the back being much arched and the shoulders thrown back. Latterly these muscles had wasted a good deal, and towards the end of 1886 the boy was unable to walk or stand alone. In December, 1886, the calves were still very firm and hard, and large in proportion to the general development, each measuring 10½ in. in diameter; the gluteal muscles were big, but softish; so also were the hamstrings; but the quadriceps extensor was much wasted on both sides. The knees and left ankle were freely movable, but the right foot for a good many years had been in a position of equino-varus. The muscles of the arms were all somewhat wasted and soft, except the left infra-spinatus, which was markedly large and firm. Though quite unable to stand alone, he could do so when held or leaning against a chair or table, and then the lumbar curve appeared much exaggerated and the shoulders were thrown back. In general health he seemed very well. I have seen this boy again recently, and I now find the left infra-spinatus, which was very large, considerably wasted, and there is much wasting of the muscles of both arms. The right calf is slightly less than it was, and now measures 10 in., whilst the left is larger and firmer than before, and measures 11½ in. The glutei and hamstring muscles are now much wasted, and both knees are rigidly fixed at a right angle; the deformity of the right foot is as before, whilst the left foot still continues natural. The boy eats and sleeps well, can dress himself, crawl about, and get downstairs alone, but has to be carried upstairs.

The smaller of the two boys, in December, 1886, though his age was fourteen, looked only about eight. He was then confined to bed with a high temperature, cough, and physical signs in the right lung, pointing to a rapid phthisis. He was a healthy and strong child at birth, but at the age of two he had trouble in walking. For several years the calves and thighs kept increasing in size, whilst his walking powers got worse and worse; but during the last three or four years the muscles had all wasted a great deal. Fifteen months previously he could not walk alone, and since then

¹ Diseases of the Nervous System, vol. i., 1886, p. 337.